

## Crime Prediction through K mean clustering

*Asles Ranjan Pandey IT, Krishna Engineering College  
Mayank Bhagukhandi IT, Krishna Engineering College,  
Shivam Sharma IT, Krishna Engineering College,*

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**Abstract** - In the contemporary world, crimes are on the surge. Criminals are becoming more technological knowledgeable in order to commit crime. The aim of this paper is to make an appropriate system to predict the crime pattern in different areas and to securitize the situation. It helps to supervise the crime and to take the considerate measures to reduce the crimes. To securitize the current situation, we are using data mining method k mean algorithm for efficacious forecast.

**Key Words:** K-mean algorithm, data mining, clustering, google maps, mining tools

### 1. INTRODUCTION

Presently to investigate the crime pattern is very tedious task. Using conventional method to predict the crime committed in particular area is a challenging job. With the advancement of the technology, it is easier to detect the pattern for crimes happening in the India.

Data mining is suitable method for prediction of crimes in the prone areas. Using different data mining methodology, it is possible to develop efficacious system. Clustering can be one of methods used for crime prediction. Clustering is the technique used to make clusters of the objects having similar properties or similar features. Clustering methods are highly reliable, have ability to deal with noisy data. It can easily adapt the changes and help to outline the useful feature which will differentiate the groups. The knowledge gained by the data mining methods are very useful for police department to eradicate the crimes[1]. There are many clustering algorithms that can be used but choosing appropriate algorithm relies on large amount of dataset and on the complexity of the relationship between the various kind of data.

K mean algorithm is the method aims to divide observations into k clusters in which each observation belongs to the cluster with the nearest mean. K mean algorithm is useful because of its greater benefits. It is easy to implement and have higher chance of producing greater number of cluster than other clustering methods. It is very useful for large scale dataset.

This algorithm have faster computational speed than other algorithm. Most of the real life data comes with the unlabeled which means not belong to particular class. This algorithm is useful in such cases.

This paper contains the method to develop crime prediction system through k mean algorithm. Clusters are formed on the basis of crimes. These clusters of crimes can be indicating geographically on a google map with the exact location co-ordinates. This will also help to pictorialize densely populated areas of crimes.[3] This is very advantageous for respective departments as well as for public to view the information regarding the crimes. . We will use the real case dataset for analysis of the crime pattern.

### 2. PROPOSED SYSTEM

The proposed system contains two modules: User module and Admin module.

Admin module where admin's work is to train the dataset and upload to make it available for the users. The dataset will contain many features and for cleaning the dataset it is necessary to filter it according to our requirement.[4]

User module where user's work is to analyze the information for which the user is looking. User can select the various option to see the result. User can see the result in google maps, pie chart and bar graph .In the google map result is displayed according to the longitude and latitude based on clusters form according to crimes . In the pie chart and bar graph the result is displayed according to the years and crimes. [4] .The architecture is described in figure 2.1

The procedure is as follows:

**Client Side:** On the client side we will see the web page for users as well as admin. User can search the information and admin can enter the details and update also. The client side is developed by HTML, CSS, JavaScripter will also link google maps for representation of the result.

**Server Side:** On the server side we have database which will contain the dataset we prepared to train the machine. We implement the algorithm suitable for the cleaning and

clustering of the data. After implementing the algorithm the expected output is displayed to the users.

- a) After the pre-processing phase, the dataset will be ready for processing.
- b) We can filter the dataset again if required.
- c) K mean algorithm is applied at this stage for forming the clusters
- d) After applying the algorithm, graph will be plotted accordingly.
- e) Then main work of execution starts for different crimes.
- f) The result is displayed in various forms like bar graph and pie chart.

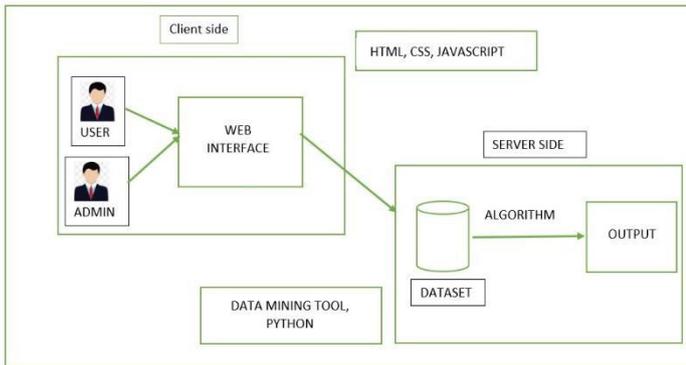


Figure 2.1

### 3. IMPLEMENTATION DETAILS

Implementation details has been divided into two phases:

#### 1) Pre-processing phase

In the pre-processing phase, admin will collect all the information of the crimes according to years and their location.

Admin will construct the dataset after the processing.

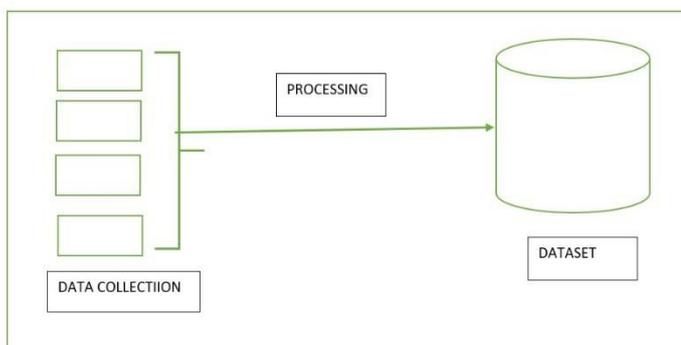


Figure 3.1

#### 2) Processing Phase

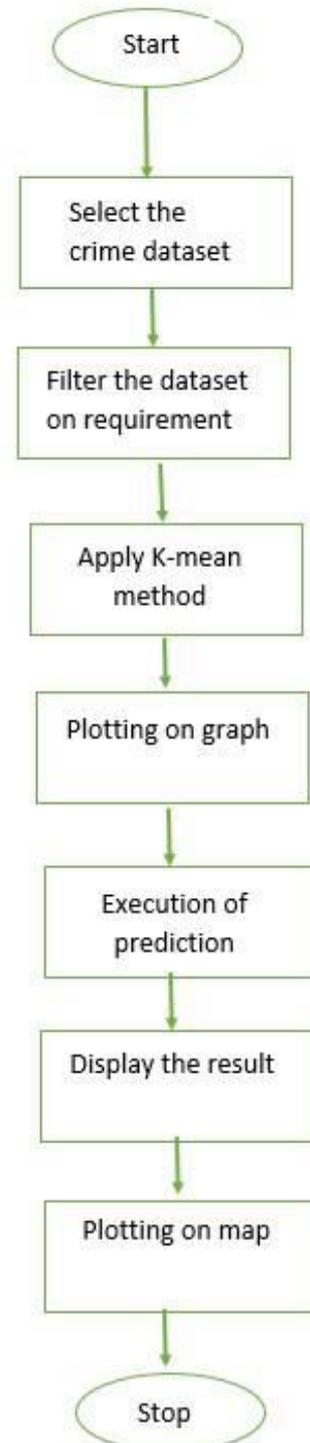


Figure 3.2

#### 4. DISCUSSION

In this project based on K mean clustering we have met all the necessary criteria of algorithm. The user can view details of their preference from the data available. All data are stored in the form of database .

#### 5. CONCLUSION AND FUTURE WORK:

. This paper presents a framework for predicting the crime using data mining methods. This project helps to design a system which predicts the crime trends based on historical dataset from year 1999-2019 [5]. We analyze the crime situation by plotting it according to the year and location on google maps. From the visual representation it is easy to pinpoint the crime trends over the location and years. The proposed project will give promising result in the current situation which is very tedious to handle and also help police and respective department to act accordingly.

The proposed system can be upgraded by adding other methods like fuzzy system and naïve bias algorithm.

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